

ABSTRACT

The present invention relates to polypeptides having a brain-localizing activity, molecules comprising these polypeptides, and pharmaceutical agents that confer brain-localizing activity. The present inventors are the first to reveal amino acid motif sequences involved in brain-localizing activity. Polypeptides that comprise such motif sequences and have brain localizing activity were discovered as follows: DNAs encoding polypeptides comprising random amino acid sequences were synthesized, and incorporated into a phage library. The phage library produced was used to screen for polypeptides having brain-localized activity, which yielded such several polypeptides. These polypeptides comprised common sequences, which lead to the successful discovery of amino acid motif sequences involved in brain-localizing activity. The polypeptides of the present invention comprising the motif sequences specifically bind to cerebrovascular endothelial cells, and induce a transcellular pathway that enables brain-specific targeting and transport of substances in the cerebral parenchyma, which was not possible prior to the present invention.